“A STUDY OF THERMAL POWER GENERATION COMPANY, PARALI DISTRICT BEED ”

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By

PARDESHI TAPASYA GANESHLAL

NET, M.Com, M Phil, GDC&A

Under the Guidance of

DR. CHAVAN ASHOK DAULATRAO

P.hd., M.Com, M Phil,

LATE. RAMESH WARPUDKAR COLLEGE,

SONPETH, DIST. PARBHANI

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1 Introduction

Today everybody is crying about energy shortage. We are concerned presently that of Electrical Energy. The importance of electricity in Industries, Agriculture, Water Supply, Hospitals and household usage is vital as everybody of us knows.

Power is necessary to run the machines. This power is generated using coal, petroleum, steam & electricity. All of this are power resources.

Solar energy, running water, coal & wind are used for producing electricity. Electric Power which is one form of energy is an essential ingredient of economic development & it is required for commercial and non commercial uses of power refer to the use of electric power in Industry, agriculture & transport. Non commercial uses include electric power required for domestic lighting, cooking use domestic machines or mechanical gadgets like the Refrigerators, Air conditioners etc. The demand for electricity for domestic use should grow at a fast rate with rapid growth at a fast rate with rapid growth of population in India.

India is the **sixth largest in terms of power generation**. About **65%** of the electricity consumed in India is generated by thermal power plants, **22%** by hydroelectric power plants, **3%** by nuclear power plants and rest by **10%** from other alternate sources like solar, wind, biomass etc.

Thermal power generation plant or **thermal power station** is the most conventional source of electric power. **Thermal power plant** is also referred as **coal thermal power plant** and steam turbine **power plant**.

The theory of **thermal power station** or **working of thermal power station** is very simple. A **power generation plant** mainly consists of alternator runs with help of steam turbine. The steam is obtained from high pressure boilers. Generally in India, bituminous coal, brown coal and peat are used as fuel of boiler. The bituminous coal is used as boiler fuel has volatile matter from 8 to 33 % and ash content 5 to 16 %. To increase the thermal efficiency, the coal is used in the boiler in powder form.

In **coal thermal power plant**, the steam is produced in high pressure in the steam boiler due to burning of fuel (pulverized coal) in boiler furnaces. This steam is further supper heated in a super heater. This supper heated steam then enters into the turbine and rotates the turbine blades. The turbine is mechanically so coupled with alternator that its rotor will rotate with the rotation of turbine blades. After entering in turbine the steam pressure suddenly falls and corresponding volume of the steam increases. After imparting energy to the turbine rotor the steam passes out of the turbine blades into the condenser. In the condenser the cold water is circulated with the help of pump which condenses the low pressure wet steam. This condensed water is further supplied to low pressure water heater where the low pressure steam increases the temperature of this feed water, it is again heated in high pressure. For better understanding we furnish every step of function of a thermal power station as follows-

1) First the pulverized coal is burnt into the furnace of steam boiler.
2) High pressure steam is produced in the boiler.
3) This steam is then passed through the super heater, where it further heated up.
4) This supper heated steam is then entered into a turbine at high speed.
5) In turbine this steam force rotates the turbine blades that means here in the turbine the stored potential energy of the high pressured steam is converted into mechanical energy.
6) After rotating the turbine blades, the steam has lost its high pressure, passes out of turbine blades and enters into a condenser.
7) In the condenser the cold water is circulated with help of pump which condenses the low pressure wet steam.
8) This condensed water is then further supplied to low pressure water heater where the low pressure steam increases the temperature of this feed water, it is then again heated in a high pressure heater where the high pressure of steam is used for heating.
9) The turbine in thermal power station acts as a prime mover of the alternator.

2 Review of Literature

The researcher has attempted a close and in depth reading of the review literature. Researcher reviewed various national and international studies on this relevant subject. It is this literature that inspires researcher for research.

Paper presented by Mukesh Gupta in International Journal of Emerging Technology and Advanced Engineering under the title "Exergy Based Evaluation of Coal Based Thermal Power Plants: A Review" This paper presents a review of the methodology to evaluate the performance of coal based thermal power plant using the exergy as the main criterion instead of the conventional First Law of thermodynamics based approach which does not account for the inherent ire versibilities of the system and is hence inappropriate for evaluation of coal based thermal power plants.

Noam Lior describes in detail about-Thoughts about future power generation systems and the role of exergy analysis in their development
The development of new economical materials and devices would allow design of thermal power plants for operation at higher temperatures and efficiencies ,but emphasis should be placed on direct energy conversion ,more efficient production of power from low-temperature sources ,such as solar and waste heat ,co-generation ,low-emission combustion systems ,exploration of hydrogen as fuel ,and significantly safer nuclear power production must be pursued.Since solar energy is an inexhaustible and nonpolluting source which does not alter the global thermal balance ,cost reduction in solar power production should be pursued ardently.

Raviprakash kurkiya, Sharad chaudhary described in paper under title- Energy Analysis of Thermal Power Plant The energy losses from individual components in the plant is calculated based on these operating conditions to determine the true system losses. In this, first law of thermodynamics analysis was performed to evaluate efficiencies and various energy losses. In addition, variation in the per-centage of carbon in coal content increases the overall efficiency of plant that shows the economic optimization of plant

Research Paper - Exergy Analysis of Boiler In cogeneration Thermal Power Plant presented by Sarang j Gulhane, Prof.Amit kumar Thakur. Effective energy utilization and its management for minimizing irreversibility has made human to look for efficient energy consumption & conversion. Based on several research activity and local power plant experience some key observation has made and is presented in this paper

Dr. G Kalivarathan has suggested that,we should improve the efficiency of boiler and turbine by proper maintenance. There are many factors, which influence the efficiency of the thermal power plant. The fuel used for combustion, type of boiler, varying load, power plant age, they lose the efficiency. Most of theloss in efficiency due to mechanical wear on variety of components,resulting heat losses. Therefore, it is necessary to check all the equipments periodically.

3 Statement of Problem

"A STUDY OF THERMAL POWER GENERATION COMPANY, PARALI , DISTRICT BEED "

4 Significance of Study:-

This study will be helpful in following manner-

1) Thermal power generation.
2) Awareness of problems of Thermal Power Generation Company.
3) Analyse the working of Thermal Power Generation Company.
4) New plant development.
5) Development of Rural area.

4.2 Objectives of the Study:-

1) To study the background of Thermal Power Generation in Beed district.
2) To study economy of Beed district
3) To study contribution of Thermal Power Generation company in the development of Rural Area
4) To ascertain the problems of thermal Power Company & to suggest the suitable remedies to overcome them.
5) To analyse the working and financial performance of Thermal Power Company
6) To examine the impact of Thermal Power Company on the socio economic development of workers
7) To study the government schemes and its impact on the Thermal Power Company

4.2 Hypothesis to be tested:-

1) Thermal Power Generation Company benefits in Rural development of Beed district.

2) Thermal Power Generation Company benefits to Socio Economic development of workers.
3) Thermal Power Generation Company works efficiently.

5. Research Methodology of Study

"Study of Thermal Power Generation Company, Parali , District Beed" is Descriptive type research study. Descriptive research includes surveys and fact- finding enquiries of different kinds. The major purpose of descriptive research is description of the state of affairs as it exists at present.

5.1-Collection of Data

Thermal power Generation Company contribution to Rural development of Beed District. This study is based on both the types of data i.e .Primary and Secondary data.

Primary Data - Primary data is collected from Thermal Power Generation Company , parali, & other unskilled employees which are related to this study.

Secondary Data - To complete this study the data is used & collected from different sources such 'Srujan' Book published by Thermal Power Generation Company, parali, Govt. published Reports, phd thesis, related books from different libraries, newspapers & more websites.

5.2-Selection of Sample-

In Marathwada region there are eight districts. Beed district is considered for this study. In Beed district one thermal power generation company in parali .

5.3 Tools and Techniques of the study

This study is carried out on the basis of primary data through investigation, interviews, questionnaires, information received through thermal power generation company. Secondary data is used whenever necessary.

In secondary data collection number of articles and reports published in newspapers and periodicals, special bulletins, magazines, journals will be used. The data so collected will be scrutinized, tabulated and analyses with the help of some statistical tools and techniques i.e. mean, percentage, average and other.

5.4 Scope and limitations of the study

In marathwada region eight districts are included i.e. Aurangabad , Nanded, Latur, Jalna ,Beed, Parbhani, Osmanabad, Hingoli , one thermal power station. Due to time and cost constraints Beed district place is selected for the study purpose and the data will be collected for last ten years i.e. 2006-07 To 2016-17.

6 Chapter scheme of the study

6.1 Chapter –I

Introduction-

Introduction of Thermal Power Generation

Thermal power in India , Maharashtra and Marathwada

Contribution of Thermal Power Generation Company in the development of Rural Area

Economy of Beed district

Significance of the study

Objectives of the study

Research Methodology

6.2 Chapter II

Review of Literature

6.3 Chapter III

Impact of Thermal Power Generation Company on the Socio- Economic Development of workers

6.4 Chapter IV

Problems of Thermal Power Generation Company

6.5 Chapter V

Governments motivation to Thermal Power Generation Company

6.6 Chapter VI

Data collection and analysis

6.7 Chapter VII

Summary, Suggestions and Recommendations

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6) Electrical Engineering –vol-III-Electric power distribution system F. C.Chan

7) Research methodology - ***C. A. Kothari***

8) Social Research Methodology **– *M.K. Ghosh & O.M. Prakash***

9) Engineering Economics & Management **– *Nandkumar K. Hukeri***

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11) News Paper – i) Indian Express ii) Sakal iii) Times of India iv) Lokmat v) Loksatta

Research Guide

DR.CHAVAN ASHOK DAULATRAO

P.hd., M.com, M Phil

LATE. RAMESH WARPUDKAR COLLEGE,
SONPETH,DIST. PARBHANI

Research Student

PARDESHI TAPASYA GANESHLAL

NET, M.Com, M Phil, GDC&A